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*Published in:*  
Capital weekly

*Publication date:*  
2013

*Document version*  
Peer reviewed version

*Citation for published version (APA):*  
Richardson, K. (2013). The greatest challenges of the 21st century. *Capital weekly*.

## The Greatest Challenge of the 21st Century

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I have been told that the picture most often downloaded from the internet is a picture of the Earth taken from space. Even without having the picture at hand, everyone can see its content in their mind's eye: A beautiful (almost entirely blue!) ball, swaddled in a mosaic of thin, white clouds, that seems to float in the middle of a sea of nothingness. When we look at or imagine that picture, it is obvious that the Earth has no umbilical cord and its resources are finite. When these resources have been used, where should more come from?

We are currently 7 billion people on this planet and we all are dependent on the Earth's resources for our survival. By 2050, it is predicted that we will be 9 billion people placing demands on the Earth's resources. Already, access to a number of critical resources is becoming markedly more difficult and the pressure on these resources can only increase in the future. For many resources, it is not a question of IF but WHEN they will become so depleted that they no longer can contribute to continued societal development. Fortunately, research and technological development will give us the opportunity to find alternatives for some of these resources (for example, oil) but this is not the case for all of the resources under pressure. Phosphorous – one of the fundamental building blocks of life and crucial for food production – is mined from fossil deposits. There is a finite amount of this element on Earth and it can be replaced by no other. Thus, continued social and economic development of human societies requires that we manage our relationship to the Earth and its resources in a manner that ensures that our demand for the Earth's resources remains within the supply of these resources or, at a minimum, that we are convinced that alternatives can be found for the resources we deplete.

Seen in this light, the most important discussion at the RIO+20 conference held in June 2012 escaped the attention of the international press. Under the negotiations, the EU argued that the agreement text should acknowledge the fact that the global resources and services upon which human societies are dependent are finite. The EU suggestion did not include a plan for how these resources should be shared – simply the acknowledgement that the Earth's resources are not infinite. The EU suggestion was not accepted and the Agreement that came out of Rio+20 does not, in any way, acknowledge that Earth's capacity to support human societal development is limited.

Both well-developed countries, such as the USA, and developing countries (G-77) opposed acknowledgement of the limited nature of Earth's resources in the text. Ultimately, however, this opposition largely stemmed from the fact that, as soon as we acknowledge that there is only a limited reserve of a resource that is available, then we also must consider mechanisms for sharing the available reserves. For very rich countries, where the per capita use of resources is well over the global per capita average, the only equitable outcome of a sharing mechanism would be decreased access to these limited resources. Developing countries, on the other hand, feared that an acknowledgement of the limited nature of global resources and services would, ultimately, lead to an international cap on their use and, thereby, limit their access to these resources and further development.

Many refuse to believe that the human demand for resources could ever reach the supply of the Earth's resources but the inconvenient truth that the Earth did not come equipped with an umbilical cord is not going to go away! Earlier generations refused to believe that the Earth revolves around the sun but that did not make that fact disappear. Ultimately, it is also the fact that the Earth's resources are finite that lies at the core of the current societal discussions on mitigating climate change. We have a common atmospheric garbage dump in which we deposit our greenhouse gas waste. Greenhouse gases influence the amount of the sun's heat energy which is retained near the surface of the Earth. The discovery of the greenhouse effect of these gases is not new – it has been known since 1824 when it was described by Joseph Fourier, so it is another of those inconvenient truths that is



here to stay. The more greenhouse gas we put into the garbage dump, the warmer the Earth becomes.

Global leaders have declared that human caused climate change must not be allowed to exceed 2o C. It is relatively easy, then, to calculate how big the garbage dump is, i.e. the approximate total amount of CO<sub>2</sub> that we can put in the greenhouse gas garbage dump and still constrain human-caused global warming to within 2o. We can see that the garbage dump is about half filled – and we know exactly who used the first half. International climate negotiations, then, are really all about deciding who should have the rights to use the remaining capacity of this atmospheric garbage dump, i.e. a common global resource. Admittedly, we don't admit that or discuss it in those terms – yet – but we are coming close!

The New York Times reported after the presentation of the 1st Working Group Report on the Intergovernmental Panel on Climate Change (IPCC) in September 2013 that the final hours of negotiation revolved largely around the desire of a group of scientists to "specify a worldwide cap on global emissions of greenhouse gases — "a carbon cap" — that would apply if countries were serious about staying below an internationally agreed upper limit on global warming. It was just a single paragraph [in the negotiation text], but it had huge implications, and everyone in the room knew it. If it were adopted, it would make starkly clear how far the world remains from having any meaningful policy to tackle climate change". The Times article goes on to say that "In essence, the scientists were putting a big carbon pie on the table and asking: How are we going to carve this thing up?".

Needless to say, the scientists did not end up identifying a single "carbon cap" but there remains, simmering just below the surface of the climate change discussion, the inconvenient truth that to successfully meet society's climate change challenge, we must learn to share a common global resource. And our common atmospheric garbage dump is, by far, not the only global resource that we must learn to share if our societies are to continue to develop.

The Earth's resources and services upon which we are depend are distributed globally but unequally between countries and some, such as those in the oceans and atmosphere, do not even fall under the jurisdiction of individual countries. The greatest challenges of the 21st Century are to acknowledge within our governance system the finite nature of the Earth's capacity to continue to meet the human demand for resources and services and to develop the mechanisms to share these resources among all of Earth's inhabitants. The challenge is daunting but meeting it is essential if future generations are to enjoy continued societal growth.